

variation can probably be related to differences in environment and the relative new and small population in Western Australia.

The Wanderer has established itself in the Perth metropolitan and adjacent areas and numbers are increasing. It will be interesting to see if the breeding range extends into country areas where *Asclepias* is known to occur (e.g. Meadly, 1971). Broods occur throughout the winter. When there are sufficient consecutive sunny days egg-laying takes place. It is doubtful whether areas exist where adults can retire for the winter months. The population is at present too small for clustering to occur. This behaviour is unnecessary as larval stages are present throughout the unfavourable times of the year.

Another interesting observation is that the Lesser Wanderer and the Wanderer appear to occupy almost the same ecological niche. More information is required on the two species before this can be substantiated.

#### ACKNOWLEDGEMENTS

I would like to thank Miss Kay Elson for her valuable assistance. Officers of the CSIRO Entomological Division, Canberra, the W.A. Museum and the W.A. Department of Agriculture helped in the identification of specimens.

#### REFERENCES

- Cleland, J. Burton, and H. M. Giles. 1909. A scientific trip to the North Coast of Western Australia. *J. W.A. Nat. Hist. Soc.*, 2 (6):45-63.
- Coleman, E. 1939. Notes on the Wanderer butterfly (*Danaus archippus*) in Australia. *Vict. Nat.*, 4.
- Common, I. F. B., and D. F. Waterhouse. 1972. *Butterflies of Australia*. Angus & Robertson.
- Koch, L. E. 1971. The Wanderer Butterfly in Western Australia. *W.A. Nat.*, 12: 25-27.
- Koch, L. E. 1973. Wanderer Butterfly Sightings in Western Australia. (September 1971 to May 1972). *W.A. Nat.*, 12: 115.
- McCubbin, C. 1971. *Australian Butterflies*. Nelson.
- Meadly, G. R. W. 1971. Cotton Bush (*Asclepias fruticosa* L.). Garden plant now a noxious weed. *J. of Agric. W.A.*, 12: 65-68.
- Pearce, D. C. 1938. In Dannreuther, T. *Danaus plexippus* L. taken in Tasmania. *Entomologist*, 71: 237.
- Rainbow, W. J. 1907. *A Guide to the Study of Australian Butterflies*. T. C. Lothian, Melbourne.
- Smithers, C. N. 1965. A note on overwintering in *Danaus plexippus* (L) (Lepidoptera : Nymphalidae) in Australia. *Aust. Zool.*, 13: 135-136.
- Walker, J. J. 1915. A note on the distribution of *Danaida plexippus* in Australia. *Ent. Mon. Mag.*, 51: 294-295.
- Williams, C. B. 1930. *Migration of Butterflies*. Edinburgh.
- Urquhart, F. A. 1960. *The Monarch Butterfly*. Toronto.

### THREE STONE IMPLEMENTS FROM TOODYAY, WESTERN AUSTRALIA.

By KIM AKERMAN, Derby.

#### ABSTRACT

That stone implements were used in the preparation of hides by Aboriginal Australians has been well documented in the early literature. Apart from the reniform slate scrapers of South Australia, however, no other skin 'scraper' forms appear to have been recognized. Discussed are two such implements from the south-west of Western Australia. One of the scrapers is a multi-purpose tool combining the functions of core adze and hide scraper. A third implement, a core adze, is also discussed.

#### INTRODUCTION

The three artifacts discussed are surface finds; collected during a geological field trip in May 1970. The trip involved mapping the geology of an area five miles south-east of Toodyay, a town fifty miles east of Perth. It is hoped to show how two implements entirely different in mode of manufacture and function are combined in a third multi-purpose stone implement.

#### DESCRIPTION

The artifacts are made of dolerite from dykes that intrude Precambrian granitic and metamorphic rocks in south-western Western

Australia. The fine grained rocks from chilled margins of these dykes are tough and especially well suited for the manufacture of stone implements.

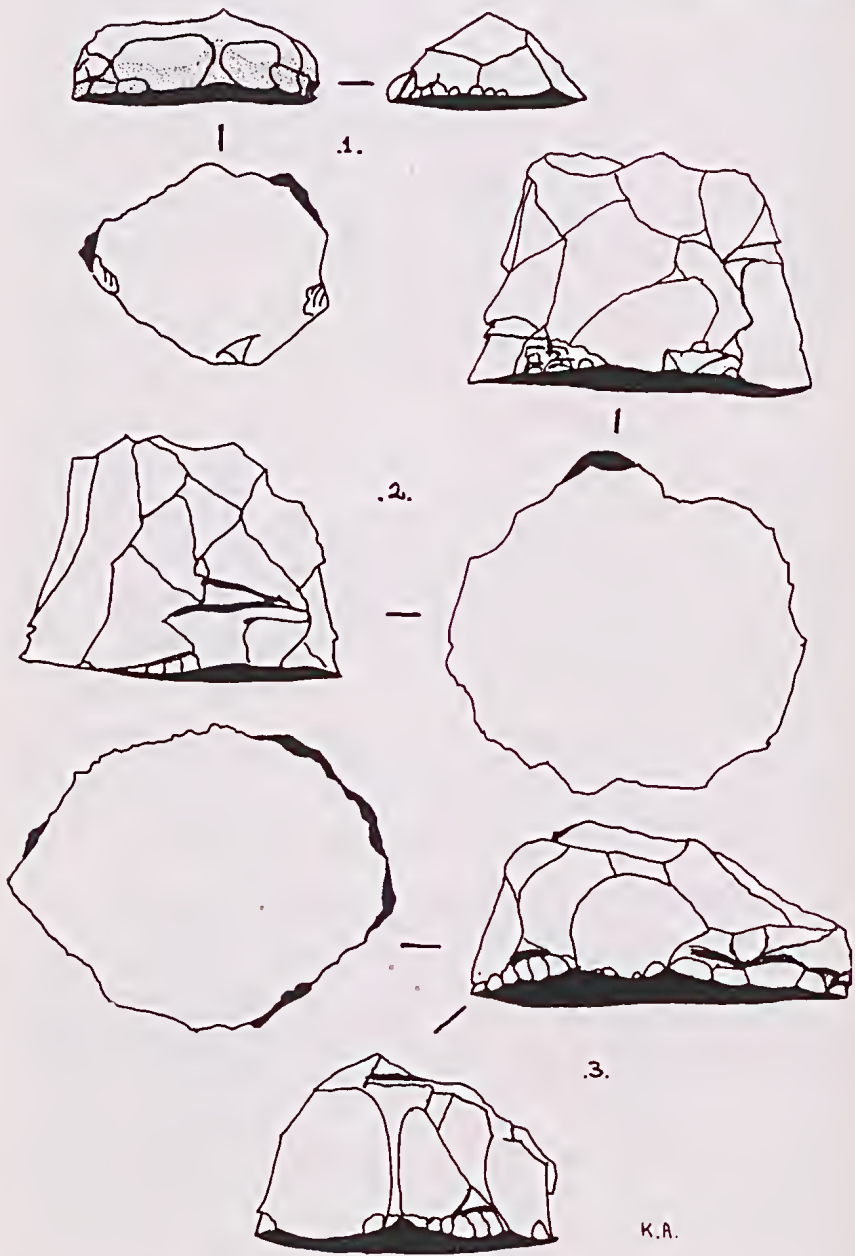


Fig. 1.—Artifact (1). Flake hide working tool. Artifact (2). Horsehoof core adze. Artifact (3). Adze-hide working tool.

The first artefact is a thick oval flake that has been struck from a prepared core. Secondary trimming is light and restricted to two areas on the flake. At the distal end the secondary trimming is of steep 'edge blunting' nature while on the proximal end of the right hand side, retouch is of the invasive 'edge sharpening' type. As well as altering the character of the edge profile, the retouch has rounded off the distal end and straightened the right hand side of the flake.

Both the dorsal and bulbar surfaces bear extensive traces of use wear. The flake scars and ridges have been polished and worn, and the working edges have become rounded in profile. Striations are visible on the bulbar surface indicating that the direction of movement while in use was approximately normal to the working edge. On the dorsal surface use gloss extends 13 mm back from the edge, on the bulbar surface it extends back 19 mm. (Fig. 1).

This intensive polishing of ridges, flake scars and bulbar surface leads me to believe that this is an implement specialized for the fleshing and currying of hides (currying—softening the hide by breaking down the fibrous structure). The sharper right hand edge may have been used as the fleshing tool, while the steeper distal end was used for currying.

The second implement is a small horsehoof core. From the basal striking platform steep primary flaking has initially shaped the implement. Secondary step-flaking retouch has been used to resharpen several areas of the periphery, resulting in indentations or concavities marring the original discoidal base (Fig. 1).

Apart from battering, that has rounded off several prominent ridges and causing 'wear step-flaking' (as distinct from step-flaking resulting from retouch) no other use traces are obvious. Cooper (1943: 348) has postulated several possible uses for similar implements. Among the uses suggested are "removing bark, cutting through limbs of trees, trimming twigs, and scooping out holes in the earth". My own experiments with specimens both of my own manufacture and of archaeological origin, have shown that such artefacts could serve also as hand adzes and as draw planes. In each case the horsehoof was held in a different attitude to the wood being worked, presenting the same working edge but from differing directions (Fig. 2).

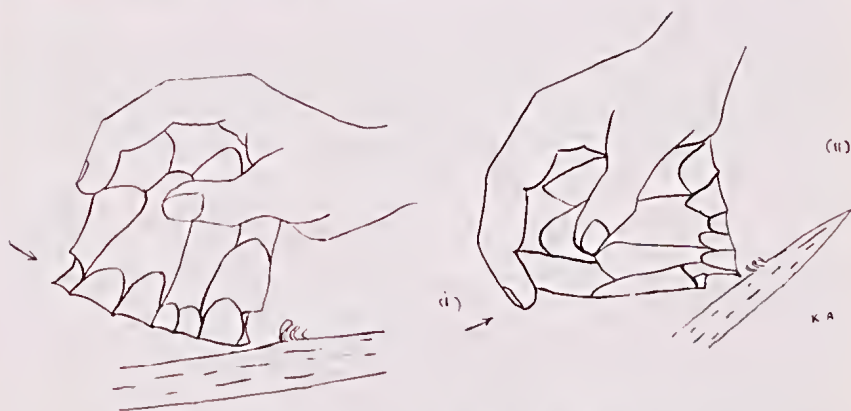


Fig. 2.—Horsehoof core as (i) adze, (ii) draw plane.

In the case of using the tool as a draw plane it was only suitable for working round wooden objects up to approximately 20 mm in diameter, i.e. it was suitable for shaping spear shafts and trimming points, etc.

The final artifact is an oval core tool. One end of the implement shows step-flaking that leaves the body of the tool over-hanging the base. The other end bears primary flaking except for one small area where secondary retouch has been sparingly applied.

This latter section of the implement has wear patterns similar to those described in the first specimen. On the basal zone can be seen the gloss and striations normal to two working edges. One working edge has been formed by the removal of a single primary flake and has a somewhat acute working angle. The other working edge has been steepened by secondary retouch. On the dorsal areas about these working edges 'use gloss' is exhibited (Fig. 1).

It appears therefore that we have an implement that combines the functions of the two preceding artifacts. A multi-purpose tool that bears evidence of use not only as an adze or chopper but also as a hide dressing implement.

Kangaroo skins were dressed by the Aborigines of the south-west of Western Australia. Sewn together, five or six hides made a cloak that served as blanket and covering. Hassell (1936: 694) has noted the use of stone implements in the preparation of such hide cloaks. "It was carefully scraped with a woman's knife and rubbed down with a stone. This rubbing was repeated every few days for a time." The "woman's knife" referred to by Hassell was a hafted kangaroo incisor. Presumably however, a stone tool may have been used in the process of "scraping" which I equate with "fleshing"; as well as for "rubbing down"—synonymous for "currying".

The use of multi-purpose tools is a feature of Aboriginal technology that has long been recognised in the ethnological literature. The Western Desert spear thrower is the classic example, serving also as a dish for both sacred and secular purposes, as a fire-making instrument, and when equipped with a flake of stone at the proximal end as a knife or adze as the need arises. Stone tools may also be put to a wide number of uses—an axe may serve as a hammer or be used as a ritual object, the stone spear point may serve as a knife or magic object as well as being used in its original intended role. The combined adze/hide working tool is but another example of the practical economy displayed by Aboriginal Australians in their material culture.

Further detailed archaeological work must be undertaken, however, before the first and third artifacts described can be accepted as part of the standard tool kit of the Aborigines of the south-west. I hope evidence will soon be forthcoming to show whether or not a continuum is involved in the evolution of the adze-cum-hide scraper, and to show that such tools occur frequently enough to deserve a niche in the systematic classification of Australian stone implements.

TABLE 1.—DIMENSIONS OF ARTIFACTS

Artifact	Length	Breadth	Thickness	Weight
1.	43 mm	35 mm	17 mm	38.5 gm
2.	64 mm	60 mm	40 mm	232.2 gm
3.	71 mm	57 mm	37 mm	181.2 gm

### SELECT BIBLIOGRAPHY

- COOPER, H. M., 1943. Large Stone Implements from South Australia. *Records South Australian Museum*, 7 (4).
- HASSELL, E., 1936. Notes on the Ethnology of the Wheelman Tribe of South Western Australia. *Anthropos*, 31.
- MCCARTHY, F. D., 1967. *Australian Aboriginal Stone Implements*. Australian Museum, Sydney.
- SEMENOV, S. A., 1964. *Prehistoric Technology*. Translated by M. W. Thompson. Barner and Noble, New York.